

## Science Wars and the need for respect and rigour

**Dubious claims that science is a purely social construction are not representative of all 'science studies'. But 'constructivism' should not be dismissed if science wishes to strengthen its role in society.**

Ever since the Scientific Revolution of the seventeenth century, scientists have been challenged with a disturbing question: do the fruits of their work provide them with privileged access to 'reality'? Initially, the most persistent questioning came from those who felt that their religious beliefs were under threat. More recently, the baton has passed to sociologists and philosophers who seek to study science as a belief system, using a range of techniques shared by anthropologists and social scientists alike.

The outcomes of these new analyses have not always coincided with the traditional self-image of scientists. This has been particularly true of the conclusions of so-called 'social constructivists' who claim that science is as much the product of a continuous dialogue between scientists as it is of controlled, isolated experimentation. While such views remained contained within relatively limited intellectual and political groups, little attention was paid to them by the mainstream scientific community. But, over the past few years, their influence has appeared to flourish not only in the academic world — including school-teaching — but also in the wider community, where it no longer appears so heretical to equate 'scientific truth' with 'the truth as seen by scientists'.

The backlash has, perhaps, been inevitable. Nor is it surprising that it started in the United States, where 'science studies' has, despite its intellectual roots in Europe, taken on a more institutionalized role through the growth of university departments. Initially the backlash had a strong and admitted political component. The achievement of Alan Sokal, the physicist at New York University who brought the issue to wide public attention with his celebrated hoax last summer in the journal *Social Text*, has been to highlight the extent to which the issues transcend simple political ideologies or motivations and reach to the heart of contemporary ideas about science, truth and reality.

The debates triggered by Sokal's hoax have revealed to a wider audience that there is indeed some shoddy thinking, not to say blatant misrepresentation of the results of scientific research, to be found under the banners of constructivism and postmodernism. This lack of rigour is wholly at odds not only with the intellectual standards of the natural sciences but also with those of scholarship in the humanities. Some non-scientific writers, for example, have appealed to scientific concepts, ranging from relativity theory to natural evolution, to illustrate or legitimize their ideas with a crassness guaranteed to embarrass or anger most readers of this journal. It is only too easy to pick out isolated statements that lack appreciation of scientific realities, such as the extent to which experimental data provide both a framework for and constraint on debate about their significance. And it is hard to find clear evidence that insights from science studies have had a positive effect on the development of scientific knowledge itself.

But it would be wrong to tar all of science studies with the same dismissive brush, or to perceive them as wholly irrelevant to scientific progress. Many working researchers would accept much of

what the constructivists say about the importance of social processes in science, ranging from the influence of fashionable ideas on the design of experiments to the negotiations that take place through the peer-review process. The intellectual world of the scientist is not a clinical, passionless void, but one filled with intense personal and interpersonal feelings. That aspect of research may often have little impact on what eventually becomes accepted as scientific truth. But, as is implied by those who continually urge journalists to write about the 'human face' of science, it remains an essential ingredient of scientific progress.

### Increasing public understanding

More significantly, those who have been developing our knowledge of science from this perspective are playing an increasingly important role in mediating the relationship between science and society. In France, many of those engaged in what others call science studies identify themselves as sociologists of innovation, and often participate actively in the painful process of managing technological change. In both Britain and the United States, such individuals are coming to play a key role in debates about the public perception of science-related risks. Similarly, the results of their research have become an integral part of the intellectual pool to which those seeking to assuage public fears of the new genetics are turning for advice and guidance.

Indeed, one of the ironies of the present debate is that the avowed goal of the so-called constructivists is one that, in principle, many of their critics avidly endorse: the increased public understanding of science. It is in nobody's long-term interests that such understanding be uncritical: propagating an idealistic image of science is, in many ways, as dangerous as the purely relativistic image that some (but only some) constructivists seek to impose.

In a welcome development, the public debate sparked by Sokal last summer in the United States appears to have ignited a similar conflagration in Western Europe (see page 381). Equally welcome is the fact that the debate has, perhaps by virtue of public fascination with embarrassment and ridicule, escaped the confines of relatively isolated corners of the academic world and the political left. The stakes on both sides are high. On the one hand, some scientists believe that they are fighting for the intellectual and social credibility of an enterprise that remains essential for human well-being. On the other, many social scientists argue equally convincingly that only a deep understanding of science as a social (as well as intellectual) process will enable us to strengthen the bridge between the worlds of science and politics that is essential if this well-being is to be achieved.

Where public perceptions of science are undermined by slipshod scholarship and misrepresentation, let battle continue. But scientists who reflect at all about the wider significance of their work stand to benefit from a sharpened awareness of the genuine insights that science studies can offer. □